**Before the**

**FEDERAL COMMUNICATIONS COMMISSION**
**Washington, DC. 20554**

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| **In the Matter of** | ) | |
| | ) | |
| **Rulemaking under Part 97** | ) | **RM-10740** |
| **of the Communications Act of** | ) | |
| **1934, as amended to Establish** | ) | |
| **Technical Standards for Certain** | ) | |
| **Amateur Radio Telephony** | ) | |
| **Transmissions** | ) | |
| | ) | |

**To: The Commission**

**COMMENTS of Nickolaus E. Leggett**
**N3NL Amateur Radio Operator**

The following are comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent pending), and a certified electronics technician (ISCET and NARTE).

In these comments, I examine some major problems with the petitioners' proposal for quantitative bandwidth standards for amateur radio single side band (SSB) [J3E] and amplitude modulation (AM) [A3E] transmissions.

**Amateur Operators Measurement of Signal Bandwidth**

The greatest weakness of the petition is its requirement for specific bandwidth limit regulations for amateur radio SSB and AM transmissions on the amateur radio frequency bands below 28.8 MHz.

The petitioners suggest bandwidth standards of 2.8 kHz for SSB (J3E) and 5.6 kHz for AM (A3E).

Amateur radio operators would need to be able to accurately measure their emitted bandwidth in order to comply with this new regulation. In fact, measuring bandwidth is a difficult process that involves expensive equipment. The needed equipment is a spectrum analyzer, which is a precision oscilloscope-based device. Spectrum analyzers are expensive equipment that individual amateur radio operators and amateur radio clubs cannot afford.

In addition, each operator would have to make repeated spectrum analyzer measurements as he or she changes the adjustments to the transmitter or makes modifications to the transmitter. This ongoing necessity eliminates the options of renting a spectrum analyzer or hiring an engineering firm to make the measurements.

**Impact on Homebuilt Equipment**

The proposed new bandwidth regulations would be a major burden on amateur radio operators who build their own transmitters. In the case of a homebuilt transmitter, the operator would have to make detailed measurements with the spectrum analyzer in order to make sure that the transmitter complied with the bandwidth standard. These measurements would have to be continued when the operator made modifications to the transmitter or even when he changed critical settings of the transmitter.

Imposing a requirement to measure bandwidth would inhibit many hams from building their own equipment. This situation would work against the following listed provisions of the basis and purpose of amateur radio (97.1):

**"97.1 Basis and purpose.**
The rules and regulations in this Part are designed to provide an amateur radio service having a fundamental purpose as expressed in the following principles:

(b) Continuation and extension of the amateur's proven ability to contribute to the advancement of the radio art.

(c) Encouragement and improvement of the amateur service through rules which provide for advancing skills in both the communications and technical phases of the art.
(d) Expansion of the existing reservoir within the amateur radio service of trained operators, technicians, and electronics experts."

**Transmitters for New Amateur Radio Operators**

As a result of changes in the International radio regulations, the Commission will probably eliminate Morse code testing for at least General Class amateur radio operators. This regulatory step will result in future new hams operating, and building, simple AM transmitters as their introduction to amateur radio. Many of these newcomers to amateur radio will operate a simple three-stage AM transmitter consisting of an oscillator, buffer, and final amplifier (with a modulator). These simple AM transmitters will replace the simple Morse Code transmitters used by previous generations of beginning amateur radio operators.

These beginners should not be forced to conduct elaborate and expensive bandwidth measurements that are really beyond both their skills and their budgets. The Commission should encourage these beginners by having a set of rules that are both easy to comply with and which encourage the homebuilding of electronic equipment. When I started with voice transmission, I used a Knight Kit T-60 transmitter that used screen-grid modulation AM. This was a very appropriate simple transmitter for the beginning operator. I would have been completely overwhelmed by any requirement to measure the bandwidth of my signal. Indeed, such a requirement would have caused me to drop out of amateur radio entirely.

**Digital Voice Transmitters**

Many analysts have stated that the future high-end transmitters and transceivers for the amateur radio service will be digital voice systems. These digital voice systems

will replace much of the current SSB operations. The petitioners make no provision for digital voice transmitters and the bandwidth required by them. This means that the regulation proposed by the petitioners would have a limited life span before it became obsolete.

**Inadequate Compliance Mechanism**

The petitioners do not describe how the amateur radio operators are supposed to comply with their proposed bandwidth regulation. They do suggest that an audio filter circuit of some sort at the microphone would be useful (Section 4.0 page 5). However, it is clear to radio operators that such a circuit would not prevent all occurrences of excessive bandwidth. The petitioners admit this in their statement: "Most certainly such a device will not guarantee that signals wider than the **dejure** standards do not appear …" This brings us back to the need for a spectrum analyzer to measure the transmitter bandwidth.

**Suggested Action**

The Commission should dismiss this petition because its proposed specific bandwidth rules would cause significant damage to the amateur radio service.

**Respectfully Submitted,**

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